

इंटरनेट

मानक

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“जानने का अधिकार, जीने का अधिकार”

Mazdoor Kisan Shakti Sangathan

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“पुराने को छोड़ नये के तरफ”

Jawaharlal Nehru

“Step Out From the Old to the New”

IS 384 (2002): Brushes, Paints and Varnishes, Flat [CHD 24: Brushware]



“ज्ञान से एक नये भारत का निर्माण”

Satyanarayan Gangaram Pitroda

“Invent a New India Using Knowledge”



“ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है”

Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”

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भारतीय मानक
रंग रोगन और वार्निश के लिए सपाट ब्रुश — विशिष्टि
(पाँचवां पुनरीक्षण)

Indian Standard
**BRUSHES, PAINTS AND VARNISHES,
FLAT — SPECIFICATION**
(*Fifth Revision*)

ICS 87.040; 87.100

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

FOREWORD

This Indian Standard (Fifth Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Brushes Sectional Committee had been approved by the Chemical Division Council.

There is no ISO standard on this subject. This standard is developed based on the indigenous technology available in India.

The existing IS 384 : 1979 'Brushes, paints and varnishes, flat' is mainly suitable for heavy type of painting work, whereas there are vast demands for a thin type of brushes, paints and varnishes, flat for use for light types of paint work in the area of household consumers, small sign painters, art designers as well as for application of lubricants on machine parts and for cleaning of machinery, etc. In order to meet the demand of this type of brushes, it was felt necessary to revise this standard incorporating the requirements of utility grade.

The composition of the committee responsible for formulation of this standard is given in Annex F.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

AMENDMENT NO. 1 AUGUST 2004
TO
IS 384:2002 BRUSHES, PAINTS
AND VARNISHES, FLAT — SPECIFICATION

(Fifth Revision)

(Page 1, clause 2) — Insert the following at the end:

'8960 : 1978 Specification for methyl parathion dusting powders

14834 : 2000 Lindane dusting powder — Specification'

(Page 6, clause 6) — Substitute 'Lindane 6.5% DP (see IS 14834) or methyl parathion 2% DP (see IS 8960)' for 'BHC dusting powder'

(CHD 24)

Reprography Unit, BIS, New Delhi, India

Indian Standard
BRUSHES, PAINTS AND VARNISHES,
FLAT — SPECIFICATION
(Fifth Revision)

1 SCOPE

This standard prescribes requirements and methods of sampling and test for flat brushes for paints and varnishes, made from bristles and set in a suitable cement.

2 REFERENCES

The following Indian Standards contain provisions, which through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below:

<i>IS No.</i>	<i>Title</i>
321 : 1964	Absolute alcohol (<i>revised</i>)
380 : 1978	French chalk, technical (<i>second revision</i>)
534 : 1992	Benzene — Specification (<i>third revision</i>)
539 : 1974	Naphthalene (<i>second revision</i>)
707 : 1976	Glossary of terms applicable to timber and timber technology and utilization (<i>second revision</i>)
1844 : 1993	Bristles (<i>second revision</i>)
3451 (Part I) : 1978	Code of practice for care and maintenance of brushes : Part 1 Pan set brushes (<i>first revision</i>)
4905 : 1968	Methods for random sampling
5060 : 1969	Glossary of terms used in brushware industry
5691 : 1970	Lacquer, cellulose, nitrate, pigmented, finishing, glossy

3 TERMINOLOGY

For the purpose of this standard, the definitions given in IS 5060 and IS 707 shall apply.

4 GRADES

This standard covers two grades of brushes:

- Grade 1 For heavy type of painting and varnishing of flat surface
- Grade 2 For light painting and varnishing in the area of household consumers, small sign painters, art designers as well as

for application of lubricants on machine parts and for cleaning of machinery, etc

5 REQUIREMENTS**5.1 Materials**

The brushes shall be manufactured from the following materials.

5.1.1 Bristles

The bristles used shall only be obtained from hogs, pigs or boars and shall satisfy the following description.

5.1.1.1 Description

Selected, properly straightened, natural colour, soft or semi-stiff bristles only (*see* IS 1844) shall be used.

5.1.1.2 The solid dressing of bristles used shall be as per the approved sample, if so agreed to by the indenter; otherwise it shall comply with the provisions given in IS 1844.

5.1.2 Wooden Handle

Any of the timber species listed in Annex A of this standard as declared by the supplier shall be used for the manufacture of the handle.

5.1.2.1 The timber shall be reasonably straight-grained along length and well seasoned to a moisture content not exceeding 15 percent, when tested by any approved moisture meter or in case of any dispute as prescribed in Annex B.

5.1.2.2 The timber shall be free from brashness, any kind of biological or non-biological deterioration, insect attack, centre-heart (pit), knots (except live pin knots), cracks warp and any other defect which may deduce the life of the brush or affect its utility.

5.1.2.3 The handles shall be lacquered with clear or coloured lacquer (*see* IS 5691), as agreed to between the purchaser and the supplier.

5.1.3 Ferrule

Thickness of tin plate for making ferrule of Grade 1 brushes for the sizes up to 50 mm shall be minimum 0.25 mm and for sizes above 50 mm shall be minimum

0.40 mm, and that of Grade 2 brushes shall be minimum 0.25 mm for all sizes.

5.1.4 Wedge

A suitable non-metallic wedge shall be used along with the bristles inside the ferrule.

5.1.5 Pins

5.1.5.1 Connecting pins

The connecting pins shall be round head steel pins 1.00 to 1.40 mm in diameter.

5.1.5.2 Securing pins

The securing pins shall be flat or round head brass or steel pins 1.00 to 1.40 mm in diameter.

5.1.6 Setting of Bristles

Bristles shall be introduced from the bottom of the ferrule; the wedge shall be placed in the proper position

and the entire mass shall be firmly set in the ferrule with any suitable cement.

5.2 Sizes

The flat brushes for paints and varnishes shall be of the sizes 12 mm, 25 mm, 38 mm, 50 mm, 63 mm, 75 mm and 100 mm for Grade 1, and 19 mm, 25 mm, 38 mm, 50 mm, 63 mm, 75 mm and 100 mm for Grade 2.

NOTE — The size of the brush indicates the internal width of the ferrule (see Fig. 1).

5.3 Dimensions and Tolerances

5.3.1 Dimensions

The Grade 1 and Grade 2 brushes shall conform to the dimensions given in Tables 1 and 2, respectively.

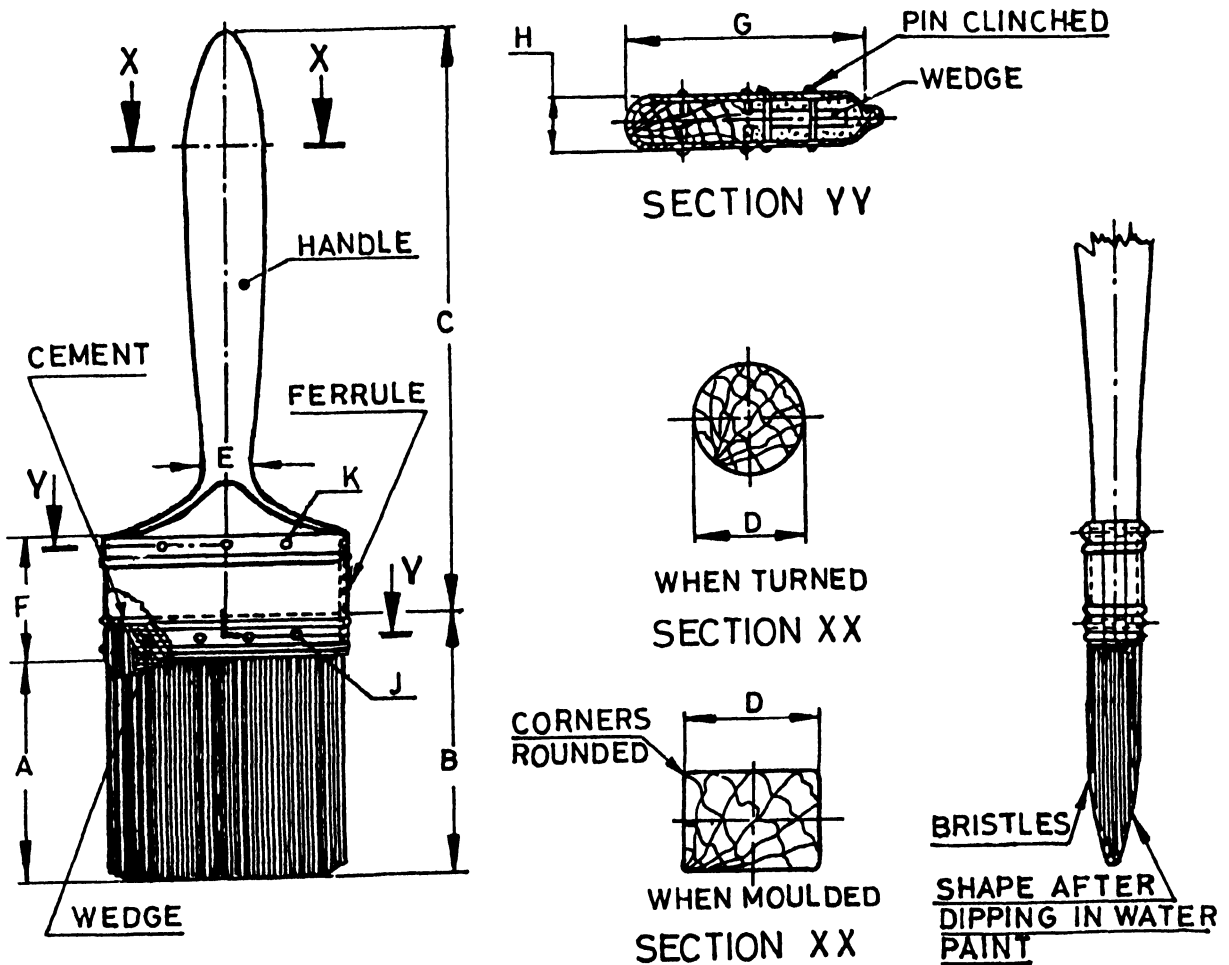


FIG. 1 SHAPE AND DESIGN OF BRUSHES, PAINTS AND VARNISHES, FLAT

Table 1 Requirements of Brushes, Paints and Varnishes, Flat Grade 1
(Clauses 5.3.1, 5.8, and Fig. 1)

All dimensions in millimetres

Sl No.	Size	Bristle		Handle		Ferrule		No. of Connective Pins	No. of Securing Pins	Mass of Bristles per Finished Brush, g	
		Protrusion	Overall Length, <i>Min</i>	Overall Length, <i>Min</i>	Diameter	Length	Internal Width				Internal Thickness
		¹⁾ (A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(J)	(K)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
i)	12	38	51	106	16	9	32	12	9	1	2
ii)	25	44	57	155	18	10	32	25	12	2	3
iii)	38	50	63	155	19	12	32	38	12	2	4
iv)	50	56	69	160	22	12	38	50	16	3	4
v)	63	63	76	165	22	14	38	63	16	3	4
vi)	75	69	82	180	25	14	38	75	16	4	6
vii)	100	75	88	185	27	17	38	100	19	6	6

¹⁾ A to K correspond to the legends in Fig 1

Table 2 Requirements of Brushes, Paints and Varnishes, Flat Grade 2
(Clauses 5.3.1, 5.8, and Fig. 1)

All dimensions in millimetres.

Sl No.	Size	Bristle		Handle		Ferrule			No. of Connective Pins	No. of Securing Pins	Mass of Bristles per Finished Brush, g	
		Protrusion	Overall Length Min	Overall Length Min	Diameter	Length	Internal Width	Internal Thickness				
(1)	(2)	¹⁾ (A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(J)	(K)	
i)	19	30	51	106	16	9	32	19	9	1	3	3.0
ii)	25	38	51	130	16	10	32	25	12	2	3	5.0
iii)	38	38	51	130	16	10	32	38	12	2	4	10.0
iv)	50	44	57	145	18	12	32	50	12	2	4	15.0
v)	63	44	57	145	19	13	38	63	12	2	4	25.0
vi)	75	50	63	150	20	15	38	75	12	3	4	30.0
vii)	100	56	69	160	20	15	38	100	12	3	6	40.0

¹⁾A to K correspond to the legends in Fig. 1.

5.3.2 Tolerances

5.3.2.1 The tolerance on the linear dimensions of handle and ferrule shall be as given in Table 3.

5.3.2.2 A tolerance of ± 1.0 mm may be allowed on the diameter of handle.

5.3.2.3 The above tolerance shall not apply to bristles for which minimum lengths have been prescribed in Table I.

Table 3 Tolerance on the Dimensions
(Clause 5.3.2.1)

Sl No.	Nominal Size mm	Tolerance mm
(1)	(2)	(3)
i)	Up to 15	± 1.0
ii)	Over 15 but below 40	± 2.0
iii)	40 and above	± 3.0

5.4 Manufacture

The brushes shall generally conform to the shape and design as shown in Fig. 1.

5.4.1 The handle shall be shaped to suit the ferrule.

5.4.2 The ferrule shall be lapped and soldered or spot welded. Alternatively, it may be hook jointed.

5.4.2.1 The ferrule if lapped, shall be properly soldered. The lapping shall be not less than 3 mm.

5.4.2.2 The ferrule shall be grooved as shown in Fig.1 and shall be coated with a suitable varnish.

5.4.3 The bristles with wedge shall be properly set and firmly cemented into the ferrule. There shall be no loose bristles and the cement shall not flow out of the ferrule.

5.4.3.1 Beveling of working edge

The working edge of the brush shall be bevelled as shown in Fig. 1.

5.4.4 The handle shall be inserted into the ferrule and secured by means of requisite number of securing pins as shown in Fig. 1 and these shall be driven into the ferrule alternately from opposite sides.

5.4.5 The connecting pins shall be properly inserted and neatly clinched on the opposite side of the ferrule or riveted.

5.5 Pull Test

When a small bunch of bristles is subjected to a straight pull with thumb and finger grip, the same shall not come out.

5.6 Benzene Alcohol Test

Immerse the bristles portion of the brush for 48 h in a mixture of benzene (*see* IS 534) and denatured spirit (*see* IS 321) (1 : 1 by volume) maintained at room temperature in such a way that at least half of the ferrule is above the level of the solvent mixture and the bristles do not touch the bottom of the container. On completion of this test, the brushes shall show no sign of loosening when used as a brush without paint on a plane surface.

5.7 Oven Test

5.7.1 For Non-Rubber Set Brushes

The brush, without handle when suspended in an oven with the protruding bristle end upward and subjected to a temperature of $60 \pm 2^\circ\text{C}$ for 4 h, shall show no appreciable creeping of the cement. Further, after cooling the brush in air for 30 min, the anchorage of bristles shall not become loose inside the ferrule and the cement shall not become loose inside the ferrule and the cement shall satisfy the pull test prescribed in 5.5.

5.7.2 For Rubber Set Brushes

The brush, without handle, when suspended in an oven with the protruding bristle end upward, and subjected to a temperature of $132 \pm 2^\circ\text{C}$ for 2 h, shall show no appreciable creeping of the cement. Further, after cooling the brush in air for 30 min, the anchorage of bristles shall not become loose inside the ferrule and the cement shall satisfy the pull test prescribed in 5.5.

5.8 Mass of Bristles per Finished Brush

The mass of bristles, as determined by the method prescribed in Annex C of this standard shall be as specified in col 13 of Table 1 for Grade 1 and in Table 2 for Grade 2. A tolerance of ± 5 percent shall be allowed on the mass of the filling material provided the average mass of the filling material per brush in any lot, is not below the specified value (*see* E-2.2).

5.9 Processing of Bristles

The processing of the bristles when tested by the method given in Annex D of this standard shall be considered as satisfactory if not less than 85 percent of the bristles by mass are of categories (a) and (b) as prescribed in D-3.2 and out of these 60 percent shall belong to category (a).

5.10 Detection of Dyed Bristles

The following two methods shall be utilized of detection of dyed bristles when tested as prescribed in Annex C of IS 1844:

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- a) Method A — Microscopic examination, and
- b) Method B — Sand paper test.

5.10.1 Method B shall be for routine testing, and Method A shall be referee method in case of any dispute

5.11 Workmanship and Finish

The handle shall be finished smooth all over and shall be properly varnished or lacquered.

5.11.1 The ferrule shall be free from sharp edges.

5.11.2 In general workmanship and finish, the brushes shall match the approved sample.

5.12 Shelf-Life

The brushes shall have a minimum shelf-life, of one year, from the date of manufacture, when properly stored under shade and adequate precautions for preservation, as given under 3 of IS 3451 (Part 1) are taken.

6 PRESERVATION

The bristles of the brushes shall be liberally dusted, before packing with a mixture of 5 parts (by mass) of BHC dusting powder and 95 percent by mass of French chalk (*see* IS 380). Alternatively, naphthalene balls (*see* IS 539) shall be used in the packing box for the brushes.

7 PACKING AND MARKING

7.1 Packing

7.1.1 The bristle portion of the brush along with the ferrule shall be neatly covered with polythene or cellulose film and secured by a rubber band.

7.1.2 The brushes shall be packed as agreed to between the indentor or inspection authority and the supplier.

7.2 Marking

7.2.1 Unless otherwise agreed to between the indentor or inspection authority and the supplier, each brush shall be legibly and indelibly marked or stamped with the following:

- a) Name of the manufacturer or his registered trade-mark,
- b) Month and year of the manufacture, and
- c) Size of the brush.

7.2.2 The rubber set brushes shall, in addition to the marking specified under **7.2.1**, be marked on ferrule or handle with the words 'Rubber Set'.

7.2.3 BIS Certification Marking

The brushes may also be marked with the Standard Mark.

7.2.3.1 The use of the Standard Mark is governed by the provisions of *Bureau of Indian Standards Act, 1986* and the Rules and Regulations made thereunder. The details of conditions under which the licence for the use of Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.

8 SAMPLING AND CRITERIA FOR CONFORMITY

8.1 Sampling

The method of drawing representative samples of the brushes and the criteria for conformity shall be as prescribed in Annex E of this standard.

ANNEX A
(Clause 5.1.2)

SPECIES OF TIMBER FOR MANUFACTURE OF HANDLES

A-1 The list of species of timber approved for the manufacture of handles for brushes is given below:

<i>Trade Name</i>		<i>Botanical Origin</i>
Roman	Devanagari	
Aini	ऐनी	<i>Artocarpus hirsuta</i> Lamk., fam. Moraceae
Banati	बनाती	<i>Lophopetalum wighianum</i> Arn., fam. Celastraceae
Bijasal	बीजसाल	<i>Pterocarpus marsupium</i> Roxb. fam. Magnoliaceae
Jam (Black Berry)	जैम	<i>E. cymosa</i> , Roxb. Fl. Ind.
Champak	चम्पक	<i>Michelia champaca</i> Linn. fam. Magnoliaceae
Chickrassi	चीकरासी	<i>Chukrasia tabularis</i> A. Juss., fam. Meliaceae
Dhaman	धामन	<i>Guswia ilifolia</i> Vahl., fam. Tiliaceae
Gamari (gumhar)	गमारी (गुम्हार)	<i>Gmelia arhorea</i> L., fam. Verbenaceae
Krishnachura (Gold Mohar)	कृष्णाचूरा	<i>Poinciana Pulcherrima</i> , Roxb. Fl. Ind.
Haldu	हल्दु	<i>Adina cordifolia</i> Hook f. fam. Rubiaceae
Kadam	कदम	<i>Nauclea Cadamba</i> , Roxb. Fl. Ind. i; <i>Sarcocephalus Cadamba</i> , Kurz for Fl.
Kaim	कैम	<i>Mitragyna parvifolia</i> (Roxb.) Korth. Syn. <i>Stephegyne parvifolia</i> Korth, fam. Rubiaceae
Kanju	कांजु	<i>Holopteia integrifolia</i> (Roxb.) Planch fam. Ulmaceae
Karanja	करंजा	<i>Galedupa Indica, Lam;</i> Roxb. Fl. Ind.
Kathal	कटहल	<i>Artocarpus heterophyllus</i> Lamk. Syn. A <i>integrifolius</i> Auct., fam. Moraceae
Kuthan	कुथन	<i>Hymenodictyon excelsum</i> wail, fam. Rubiaceae
Lambapatti	लम्बापत्ति	<i>Plancitonella longipetiolatum</i> H.J. Lam., Syn. <i>Sideroxylon longipetiolatum</i> King and Prain, fam. Sapotaceae
Aam (Mango)	टाम	<i>Mangifera indica</i> Linn. fam. Anacardiaceae
Mehagini	महगनी	
Nim-chameli	नीम चमेली	<i>Millingtonia hortensis</i> Linn. F. fam., Bignoniaceae
Kodapalai (piney)	कोडपलाई (पिनी)	<i>Kingiodendron pinnatum</i> Harms, Syn. <i>Hardwickla pinnata</i> Roxb., fam. Leguminosae
Saibabla	सैबावला	<i>Mimosa Arabica</i> , Roxb. Fl. Ind.
Sirish	सिरिश	<i>Mimosa Sirissa</i> , Roxb. Fl. Ind.
Toon	तून	<i>Toona ciliata</i> Roem., Syn. <i>Cedrela toona</i> Roxb., fam. Meliaceae

ANNEX B*(Clause 5.1.2.1)***DETERMINATION OF MOISTURE CONTENT OF TIMBER****B-1 TEST SPECIMEN**

The entire block used in brush may form the test specimen for determination of moisture content or a coupon cut from the test specimen may as well be used. When for any reason additional determination of moisture content is required separate samples shall be prepared from the sample material. Smaller specimens may be used when deemed necessary. The test shall be carried out immediately after cutting the specimen.

B-2 PROCEDURE

Weigh accurately each test specimen. Dry in a

ventilated oven at a temperature of $105 \pm 2^\circ\text{C}$ until the mass becomes constant between the successive weighing made at an interval of not less than 1 h.

B-3 CALCULATION

$$\text{Moisture content, percent by mass} = \frac{M_1 - M_0}{M_0} \times 100$$

where
 M_1 = initial mass, in g, of the test specimen;

and

M_0 = oven-dry mass, in g, of the test specimen.

ANNEX C*(Clause 5.8)***DETERMINATION OF MASS OF BRISTLES****C-1 GENERAL**

For determining the mass of bristles in a brush, they are detached by gentle hammering as described under C-2.1 or, if the bristles are set in vulcanized rubber, by soaking in a solvent and detaching the bristles from the cement as described under C-2.2.

C-2 PROCEDURE**C-2.1 For Cement Other than Vulcanized Rubber**

Remove all connecting pins as well as those securing the handle. Cut the ferrule right through its length on any one of the sides by means of a chisel. Open the ferrule and remove the bristles. Hammer the root ends of the bristles gently with a raw hide mallet to reduce the cement to powder and shake the bristles. Repeat this process till all traces of cement are removed. Dry

the bristles in an oven at $100 \pm 2^\circ\text{C}$ for 30 min. Cool for 24 h in air and weigh under prevalent atmospheric conditions.

C-2.2 For Vulcanized Rubber Setting

Open the ferrule as described under C-2.1 and remove the bristles, soak the setting in an appropriate solvent until it is sufficiently friable to be broken down. This would normally take 12 to 18 h. Remove the bristles from the solvent mixture and gently knead between the fingers so as to separate the bristles from the block into which they are mounted, but taking care that no undue force is used which may break the bristles. Repeat this process until the bristles are free from vulcanized rubber setting. Dry the bristles in an oven at $100 \pm 2^\circ\text{C}$ for 30 min. Cool for 24 h in air and weigh under prevalent atmospheric conditions.

ANNEX D

(Clause 5.9)

TEST FOR PROCESSING OF BRISTLES

D-1 GENERAL

The object of this test is to determine whether the processing of the bristles, for elimination of their natural tendency to curve, has been adequate or not.

D-2 TEST SAMPLE

A bunch of bristles, freed from cement as prescribed under Annex C and consisting of at least 10 percent of the total mass of the filling material of the brush, shall constitute the test sample.

D-3 PROCEDURE

D-3.1 Tie the test sample of the sealing material with

thread of linen, tape at one end and suspend it in water maintained at $70 \pm 2^\circ\text{C}$ for 10 min. Remove the bristles from the water and shake to remove as much water as possible. Untie the knot and spread out all the bristles on a large sheet of blotting paper in a warm place. Allow to dry at room temperature for 48 h.

D-3.2 The bristles shall then be examined and categorized as given below:

- a) Bristles which are straight,
- b) Bristles which have curvature whose radius is 230 mm or more, and
- c) Remainder.

ANNEX E

(Clause 8.1)

SAMPLING AND CRITERIA FOR CONFORMITY

E-1 SCALE OF SAMPLING

E-1.1 Lot

In any consignment, all the brushes of same size, same type, similar dimensions and manufactured from the same type of material, shall be divided into groups of 1 000 and each such group shall constitute a lot. Care shall be taken to ensure that brushes included in a lot do not differ in construction, as far as possible.

E-1.2 For ascertaining the conformity of the brushes to the requirements of this standard, samples shall be tested from each lot separately.

E-1.3 The number of brushes to be selected from a lot shall depend on the size of the lot and shall be in accordance with col 1 and 2 of Table 4.

E-1.3.1 These brushes shall be selected at random from the top, middle and bottom of the box, if the brushes are packed in only one box. If the brushes in a lot are packed in more than one box, at least 20 percent of the boxes, subject to a minimum of two shall be selected and approximately equal number of brushes shall be taken from each box, so as to constitute the required sample size given in 2 of Table 4.

Table 4 Scale of Sampling and Permissible Number of Defectives

(Clauses E-1.3 and E-1.3.1)

Sl No.	No. of Bristles in the Lot	No. of Bristles to be Selected	Permissible No. of Defective Bristles
(1)	(2)	(3)	(4)
i)	Up to 25	0	0
ii)	26 to 100	5	0
iii)	101 ,, 300	7	0
iv)	301 ,, 500	9	0
v)	501 ,, 1 000	13	1

In order to ensure the randomness of selection, procedures given in IS 4905 may be followed.

E-2 NUMBER OF TESTS AND CRITERIA FOR CONFORMITY

E-2.1 All the brushes selected according to **E-1.3** shall be examined for constructional requirements given in **5.1 to 5.4, 5.11** and Fig. 1. A brush failing in one or more of these requirements shall be considered as defective.

E-2.1.1 The lot shall be declared as conforming to

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these requirements if the number of defectives found in the sample is less than or equal to the permissible number of defectives given in col 3 of Table 4.

E-2.2 The lot having been found satisfactory according to **E-2.1.1** shall further be subjected to tests given under **5.5** to **5.10**. For this purpose, three brushes shall be selected from a lot containing 500 or less brushes and six brushes from a lot containing more than 500 brushes. These brushes may, however, be taken from those already examined and found satisfactory according to **E-2.1**.

E-2.2.1 Pull test, benzene alcohol test and oven test

shall be performed first, on each of the brushes selected according to **E-2.2** and then these brushes shall be subjected to mass of bristles per finished brush, processing of bristles and detection of dyed brushes in this order, according to methods given in **5.8**, **5.9** and **5.10** respectively.

E-2.2.2 The lot shall be deemed to have met the requirements for these tests if no failure occurs under **E-2.2**; otherwise not.

E-2.3 The lot shall be declared as conforming to the requirements of this specification if **E-2.1** and **E-2.2** are satisfied.

ANNEX F*(Foreword)***COMMITTEE COMPOSITION**

Brushware Sectional Committee, CHD 24

<i>Organization</i>	<i>Representative (s)</i>
A B Composite Private Limited, Kolkata	SHRI ANUKUL SAMANTA (<i>Chairman</i>) SHRI BASUDEV SAMANTA (<i>Alternate</i>)
All India Plastic Manufacturers' Association, Mumbai	SHRI DINI SH KENIA SHRI CHANDRAKANT GOLA (<i>Alternate</i>)
A K Ghosal & Sons, Kolkata	SHRI R K GHOSAI SHRI V GHOSAI (<i>Alternate</i>)
Bharat Heavy Electricals Limited, New Delhi	REPRESENTATIVE
Brushwell & Co, Kolkata	SHRI JAYCHANDRA MEHTA SHRI KETAN SHAH (<i>Alternate</i>)
Brush Exports Corporation, Ghaziabad	SHRI MUKESH K SHARMA SHRIMATI KIRAN KUMARI (<i>Alternate</i>)
Central Brush Works, Kolkata	SHRI A K SIKDAR SHRI A SIKDAR (<i>Alternate</i>)
Department of Wild Life Preservation, New Delhi	REPRESENTATIVE
Directorate General of Supplies and Disposals, New Delhi	SHRI M K UPADHAYA SHRI S C CHADHA (<i>Alternate</i>)
Directorate of Marketing and Inspection, Faridabad	DR G GOPALA RAO
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